AMSAT News Service Weekly Bulletins
Issue: ANS-062
Date: 2013-03-03
Sources: amsat-ans-2013-ans-062-weekly.txt

AMSAT NEWS SERVICE
ANS-062

ANS is a free, weekly, news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

Please send any amateur satellite news or reports to:
ans-editor@amsat.org

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SB SAT @ AMSAT $ANS-062.01
ANS-062 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 062.01
>From AMSAT HQ SILVER SPRING, MD.
DATE, 2013
To All RADIO AMATEURS
BID: $ANS-062.01

Vanderbilt-AMSAT RadFxSat Cubesat Selected for NASA ELaNa Program

On February 26th, NASA announced the winning projects for the fourth round of their CubeSat Launch Initiative. Project Selection was based on technical feasability and the assessed merit for conducting technology demonstrations, STEM education, and science research. These selected projects are eligible for a free launch on NASA Educational Launch of Nanosatellite (ELaNa) missions as auxiliary payloads on launches planned for 2014, 2015 and 2016. The 24 winning cubeSat proposals came from universities, a Florida high school, non-profit organizations and NASA field centers.

AMSAT partnered with the Institute for Space and Defense Electronics (ISDE) at Vanderbilt University to develop our winning proposal. The official name of the project is RadFxSat and we were selected at priority 15 out of the 24 winners. AMSAT and ISDE plan to fly a Fox-1 type satellite with a sophisticated space radiation effects experiment to be developed by ISDE. This experiment is intended to improve computer modeling of radiation effects and help improve the survivability of modern semiconductor devices in the harsh radiation environment of earth orbit. AMSAT is especially interested in this

area of science research since it affects our ham radio satellites. This project also represents an exciting "first" for AMSAT with the satellite's primary mission being science research. We believe that partnering on science and education missions will open up new launch opportunities for AMSAT satellites in the future.

Of course, RadFxSat also carries the same ham radio FM transponder as Fox-1 but on a different frequency pair. We believe we will have enough power to run the FM transponder simultaneously with the science mission most of the time. The transponder capability was an important component of our NASA ELaNa proposal since it enhances the opportunities for formal science, technology, engineering and math (STEM) education via "hands-on" school activites using an actual communications satellite. It also allows informal groups such as the boy scouts, girl scouts and ham radio clubs to introduce radio and satellite communications to our young people. AMSAT aims to show that STEM education can be exciting and fun!

The full text of the NASA announcement can be accessed on-line at: http://www.nasa.gov/home/hqnews/2013/feb/HQ_13-064_CubeSat_4.html

[ANS thanks AMSAT VP Engineering Tony Monteiro, AA2TX and Joshua Buck at NASA Headquarters, Washington for the above information]

AMSAT Shows New President’s Club Pin

You can join the AMSAT President’s Club with your contribution directly through easy, automatic charges to your credit card. Since AMSAT is a 501(C)(3) organization donations may be USA tax deductible. (Check with your tax advisor.)

Titanium Donors contribute at least US $400 per month or $4800 one time payment.
Platinum Donors contribute at least US $200 per month or $2400 one time payment.
Gold Donors contribute at least US $100 per month or $1200 one time payment.
Silver Donors contribute at least US $50 per month or $600 one time payment.
Bronze Donors contribute at least US $25 per month or $300 one time payment.
Core Donors contribute at least US $10 per month or $120 one time payment.
Every donor will receive the specially designed pin and the unique AMSAT President’s Club Certificate. Starting at the Gold Donor level
and higher you will also receive a personal invitation to the AMSAT Dayton Dinner as our guest.

You choose where your contribution should go:

AMSAT-Fox
ARISS
Future Projects
General Fund
To join you can go to the AMSAT On-Line Store or contact Martha at the AMSAT office!

Phone: US Toll Free 888-322-6728 or 301-589-6062
E-mail: martha@amsat.org

The link to the AMSAT On-Line Store is
http://store.amsat.org/catalog/

[ANS thanks AMSAT for the above information]

5th European CubeSat Symposium, 3-5 June 2013, Brussels - Belgium

It is with great pleasure to remind you about the 5th European CubeSat Symposium that will take place on 3-5 June 2013 at the premises of Royal Military Academy in Brussels, Belgium.

This is the biggest CubeSat related event in Europe and last year it attracted more than 250 participants and industrial exhibits of 7 specialized companies. This year, we are expecting more participation. Applicants from all around the world are welcome.

The call for proposals and the online abstract submission system is available at www.CubeSatSymposium.eu

The important dates are:

15 Mar 2013:	Deadline for the submission of abstracts
15 April 2013:	Notification of acceptance
15 May 2013:	Publication of the programme and the abstracts
24 May 2013:	Deadline for online registration
3-5 June 2013:	5th European CubeSat Symposium at ERM, Brussels (3 full days)
6 June 2013:	6th QB50 Workshop at VKI, Brussels (by invitation only)

The session topics are:

- CubeSat networks/constellations/swarms
- Scientific instruments/sensors on CubeSats
- Biology and microgravity experiments on CubeSats
- Technology demonstration on CubeSats
- Micropropulsion subsystems, formation flying
- Attitude determination and control subsystem
- Telecommunications, ground stations, ground station networks
- Orbital dynamics for CubeSats, lifetimes of CubeSats in orbit
- CubeSat flight experience, lessons learned
- Other topics (e.g. expandable solar arrays, atmospheric re-entry, CubeSats as free-flying payloads for the exploration of the Solar System)
- Future technologies on CubeSats
- Deployment systems for CubeSats

[ANS thanks Cem Ozan Asma, PhD for the above information]

American satellite starts transmitting after being abandoned in 1967

An American satellite, abandoned in 1967 as a piece of Space Junk has begun transmitting again after 46 years.

An Amateur Radio Astronomer in North Cornwall accidentally picked up the signal and after cross checking with various lists, has

identified it as LES1 built by the Massachusetts Institute of Technology and launched in 1965. The satellite failed to reach its intended orbit owing to a wiring error and has been drifting out of control ever since.

Phil Williams G3YPQ from near Bude noticed its peculiar signal drift caused by its tumbling end over end every 4 seconds as the solar panels become shadowed by the engine. ‘This gives the signal a particularly ghostly sound as the voltage from the solar panels fluctuates’ Phil says.

It is likely that the on board batteries have now disintegrated and some other component failure has caused the transmitter on 237Mhz, to start up when its in sunlight.

LES1 is about the size of a small car, It is not likely to re-enter the atmosphere for a long time as the orbit is still relatively high. It poses no threat other than that caused by the thousands of other pieces of space junk in orbit.

Phil says its remarkable to think that electronics built nearly 50 years ago, 12 years before Voyager 1, and long before microprocessors and integrated circuits, is still capable of working in the hostile environs of space.

Listening to the signal you can easily imagine the craft tumbling over and over every 4 seconds and the transmitter starting up as the sun rises. He refers to the hobby as ‘Radio-Archeology’!

[ANS thanks Phil Williams G3YPQ and Southgate ARN for the above information]

STRaND-1 Information and Telemetry

STRaND-1 carries an amateur radio AX.25 packet radio downlink on 437.568 MHz using 9600 bps FSK modulated data with HDLC frame, NRZI encoding.

Free satellite tracking software:
• SimpleSat Look Down http://www.amsat-uk.org/?p=17
• Gpredict http://gpredict.oz9aec.net/
• Orbitron http://www.amsat-uk.org/?p=51

Dr Chris Bridges would be delighted to receive all available telemetry files by email to C.P.Bridges@surrey.ac.uk

Mark Hammond N8MH has provided these tips to decode STRaND-1:

(1) Sprint-2 TNC set at 9600 baud in KISS mode (or any 9600 TNC in KISS mode probably)
(2) Using this software to capture http://www.dk3wn.info/files/online_kiss_plus.zip
(3) And using this software to decode the captured KISS files http://www.dk3wn.info/files/kissdump.zip

Thanks to Mike Rupprecht DK3WN for the excellent software.

Jan PE0SAT describes how he used the free TNC emulator software AGWPE and SDR# to decode the telemetry. This approach means you don’t

have to buy a dedicated hardware TNC it simply uses your existing PC and radio that supports 9600 bps data:

(1) Record a pass using SDR# and a FUNcube Dongle Pro+ and save the IQ wav file so you can work with it after the pass.
(2) Configure AGW Packet Engine (AGWPE) as a 9600 baud modem using your audio mixer as input. If you don't have an audio mixer, use audio VAC to route the received audio to the AGW audio input.
(3) When the AGW packet engine is running use AGW-Online-KISS from DK3WN to connect to the packet engine and decode the telemetry.
(4) Open the IQ wav file within SDR# and playback the recorded file and tune to the correct receive frequency, now you can see decoded data within Online-Kiss.
(5) Feed the files captured to KISS-Dump

Descriptions of ONLINE KISS +, AGW ONLINE KISS and KISS Dump + are at http://tinyurl.com/SatSoftwareDK3WN/

The free AGWPE soundcard packet software AGWPE.zip is available at http://www.sv2agw.com/downloads/

Guide on how to use AGWPE http://www.soundcardpacket.org/

Latest Keps for the objects from the PSLV-C20 launch. Note: At the current time the object to satellite mapping is not known:

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2013-009A
1 39086U 13009A   13057.07723200 -.00000047  00000-0  00000+0 0    66
2 39086  98.6489 247.4456 0046840  48.7060 103.7711 14.45874186    76
2013-009B
1 39087U 13009B   13057.12205894 -.00000045  00000-0  00000+0 0    65
2 39087  98.6295 247.4478 0010362 263.0055  96.9849 14.33603731    70
2013-009C
1 39088U 13009C   13057.12202184 -.00000045  00000-0  00000+0 0    54
2 39088  98.6260 247.4462 0010229 264.9844  95.0146 14.33699090    77
2013-009D
1 39089U 13009D   13057.12196648 -.00000045  00000-0  00000+0 0    52
2 39089  98.6302 247.4430 0009913 269.8258  90.1934 14.33842702    72
2013-009E
1 39090U 13009E   13057.12180062 -.00000045  00000-0  00000+0 0    57
2 39090  98.6314 247.4520 0008151 271.9062  88.1247 14.34269067    79
2013-009F
1 39091U 13009F   13057.12171611 -.00000045  00000-0  00000+0 0    69
2 39091  98.6289 247.4453 0009293 286.2139  73.7956 14.34449938    72
2013-009G
1 39092U 13009G   13057.12216226 -.00000045  00000-0  00000+0 0    62
2 39092  98.6325 247.4484 0010738 258.3712 101.6263 14.33353747    74
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For more information visit
http://amsat-uk.org/satellites/strand-1/strand-1-telemetry/

[ANS thanks AMSAT-UK for the above information]

ARISS NEWS

Succesful ARISS Contacts

Uplands Elementary School Penticton, British Columbia, Canada - 2013-02-22

A successful ARISS Contact was made with with participants at Uplands Elementary School, Penticton, BC, Canada on 22 Feb. The contact began at approximately 19:36 UTC. The duration of the contact was approximately 9 minutes and 30 seconds. The contact was a telebridge between OR4ISS and IK1SLD.

Astronaut Chris Hadfield talked to students (K-6) throughout the South Okanagan & Similkameen Valleys in beautiful BC. They had students & home school students from Penticton, West Bench, Oliver & Keremeos. The event was hosted at Uplands Elementary, a school located in Penticton. Lisa Edwards, Principal, believes that students can "SOAR with a view to excellence" in the right environment. There has been a team of people in the community whose goal is to make the Ham Radio contact as part of a wider educational experience that inspired students & educators to continue to explore STEM & space exploration for years to come.

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Soleado Elementary School Ranchos Palos, California, USA - 2013-02-25

A successful ARISS Contact was made with with participants at Uplands Elementary School, Penticton, BC, Canada on 22 Feb. Soleado Elementary School, Ranchos Palos Verdes, CA on 25 Feb. The event began at approximately 19:53 UTC. The duration of the contact was approximately 9 minutes and 30 seconds. The contact was direct between NA1SS and KE6JPM. Astronaut Chris Hadfield talked to students.

Soleado Elementary School's mission is to educate each and every one of its students to their fullest potential while cultivating a lifelong love of learning. Named for its beautiful location in the hills of Rancho Palos Verdes, our school is proud of its rich cultural background, academic achievement, and involvement in extra-curricular activities. Our mascot, a rosy-cheeked sun, is an exceptionally fitting characterization of our school, which wraps our students in the arms of a caring and supportive community that nurtures development of the whole child.

Founded in 1968, even Soleado's physical design embodies community and cooperation, with each core educational building housing five classrooms with one wall "open" to a shared "big room" in the center. The open classroom environment facilitates daily teacher collaboration and student interaction within and among grade levels, while "big rooms" allow for large group activities and foster a positive feeling of family among our students and staff. In addition to our strong sense of community and our open classroom model, another distinguishing characteristic of our school is its cultural and linguistic diversity. With 420 "Soleado Suns" this year in grades DK through 5, our student body encompasses families who come directly from 30 different countries speaking 21 languages.

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4th Dimotiko Scholeio Chaidariou, Chaidari, Greece - 2013-02-28

A successful ARISS Contact was made with with participants at 4th Dimotiko Scholeio Chaidariou, Chaidari, Greece on 28 Feb. The event began at approximately 09:42 UTC. The duration of the contact was approximately 9 minutes and 30 seconds. The contact was direct between OR4ISS and J41ISS.

4th Dimotiko Scholeio Chaidariou is located in Chaidari, a suburb in the north-west of Athens. It was constructed in 1978, but it is now being renovated so as to be more energy efficient. It is a two-storey

building with 16 classrooms, a Head office and a stuff room.

The school serves 256 pupils, aged between 6 and 12 years old, from 1st Grade through 6th Grade. It is staffed by a headmistress and 24 teachers, 12 of whom teach all subjects required in the curriculum (that is: Greek Language, Mathematics, Geography, History, Science, Religious Education) plus two Physical Education teachers, a Music lessons teacher, two English language teachers, a French language teacher, a German language teacher, a teacher of Art, a teacher for Theatre, an Information & Technology teacher and a teacher responsible for the afternoon zone study. There is also a teacher who helps those pupils with special educational problems. The official lessons are in the morning (Monday - Friday) start at 8:10a.m. and finish at 2:00p.m. All pupils attend morning lessons, but those pupils whose both parents work, stay on at school and they study and prepare their homework for the next day starting at 12:30 p.m. and finish at 4:15p.m.

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Talcott Mountain Science Center & Academy, Avon, Connecticut, USA - 2013-02-28

A successful ARISS Contact was made with with participants at Talcott Mountain Science Center & Academy, Avon, Connecticut, USA on 28 Feb. The event began at approximately 15:53 UTC. The duration of the contact was approximately 9 minutes and 30 seconds. The contact was direct between NA1SS and W1TMS.

Talcott Mountain Science Center is one of Connecticut's premier informal science education institutions. The Center has been an initiator and catalyst in providing enrichment science education to students throughout the Northeast and a leader in teacher in-service education, including special programs for girls in science. TMSC is recognized for its innovations in gifted and talented programs, for its earth and space, alternative energy, atmospheric and environmental science activities for students, with ongoing science and technology in-service education for teachers as well as its one-of-a-kind k-8 model school for intellectually excited students, Talcott Mountain Academy for Mathematics, Science and Technology. Since 1985, Talcott Mountain Science Center has been nationally recognized as a pioneer in the development of interactive video programming in math and science education.

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Contacts hopeful for the coming week

ARISS is requesting listener reports for these contacts.   Due to issues with the Kenwood radio that are not fully understood at present, the Ericsson radio is going to be used for these contacts. ARISS thanks everyone in advance for their assistance.

Lycée Polyvalent Anatole France, Cedex, France, direct via F4KIS/P
Contact is a go for: Mon 2013-03-04 11:06:27 UTC 67 deg (If Space X launches on time)

Canyon Owyhee School Services Agency (COSSA), Wilder, ID, direct via W7VOI
Contact is a go for: Mon 2013-03-04 18:49:04 UTC 37 deg (If Space X launches on time)

Stonepark Intermediate School, Charlottetown, Prince Edward Island, Canada, direct via VY2PEI

Contact is a go for: Thu 2013-03-07 16:26:42 UTC 33 deg (If Space X launches on time).

ARISS is an international educational outreach program partnering the participating space agencies, NASA, Russian Space Agency, ESA, CNES, JAXA, and CSA, with the AMSAT and IARU organizations from participating countries.

ARISS offers an opportunity for students to experience the excitement of Amateur Radio by talking directly with crew members on-board the International Space Station. Teachers, parents and communities see, first hand, how Amateur Radio and crew members on ISS can energize youngsters' interest in science, technology, and learning. Further information on the ARISS program is available on the website http://www.ariss.org/ (graciously hosted by the Radio Amateurs of Canada).

[ANS thanks ARISS for the above information]

AMSAT-DC Workshop on Portable Satellite Ground Stations

[This originally appeared in ANS-020, see ANS-055 for details on registration]

The AMSAT-DC Group is planning for a Spring Workshop 2013, to take place on Saturday, March 23, at the NASA Goddard Space Flight Center in Greenbelt, Maryland. It will be a nearly all-day event.

This is a workshop for those who wish to learn more about satellite operations and develop their own portable ground station. Participants will bring their wares to assemble, show, and explain to others that which will feature one or more of the following:

+ One's own laptop computer, with appropriate software installed, such as for satellite tracking, SDR receiver control, antenna control (optional), audio recording, time stamp track, and any of many other apps.

+ The FUNcube Dongle Pro receiver or equivalent. We will emphasize receiving only, and not the transmit side at this particular time.

+ One or more antennas for 146 MHz and 436 MHz, Arrow, Elk, or homebrew on a camera tripod, small mast, homebrew PVC, or hand-held.

+ Everything, or almost everything, ought to be designed to be powered from a regulated 12-volt DC source of your choosing. A table will be provided with a shared 120VAC wall outlet within about 50 feet.

Volunteers are invited to join the planning committee (contact Pat at n8pk at amsat.org.) Registration information will be announced by February 15 via the AMSAT News Service (ANS), and on the AMSAT Calendar of Events under http://www.amsat.org

The workshop cost is expected to be low (for incidental items) or free to AMSAT members. Any non-US citizen who would like to attend must contact Pat by February 15 at the latest.

To volunteer or ask questions contact Pat at n8pk at amsat.org.

Links for antenna ideas:
http://arrowantennas.com/
http://www.elkantennas.com/
http://www.g6lvb.com/homebrewarrow.htm
http://www.amsat.org/amsat-new/information/faqs/crow/index.php
http://www.amsat.org/amsat-new/echo/Az_El_Pos.pdf
http://www.wa5vjb.com/references/Cheap%20Antennas-LEOs.pdf
http://www.amsat.org/amsat-new/tools/downloads/iROTOR.pdf
http://www.arrl.org/shop/The-ARRL-Satellite-Handbook/
http://ac6v.com/antprojects.htm

Links for software ideas:
http://www.amsat.org/amsat-new/tools/software.php
http://www.amsat.org/amsat-new/tools/
http://www.moetronix.com/spectravue.htm
http://www.amsat.org/amsat-new/information/faqs/resguide.pdf
http://sdrsharp.com/

Links for receiver ideas:
http://www.funcubedongle.com/
http://www.amsat.org/amsat/intro/sats_faq.html
http://tinyurl.com/cdo9tyo (Spectravue Configuration)
http://sdrsharp.com/

AMSAT-DC
http://patkilroy.com/amsat-dc/

[ANS thanks Pat Kilroy, N8PK, AMSAT Area Coordinator, Maryland-DC
 for the above information]

AMSAT Forum at ACADIANA ARA Hamfest - Free Admission Coupons for Youth

ACADIANA ARA would like to invite you to our 2013 Hamfest, March 8
and 9 at the Rayne Civic Center, Rayne Louisiana . Attached
is our Hamfest flyer with all the information and a FREE admission
coupon for you and your parents to attend our hamfest. Come out to
the hamfest to meet other hams, see new and used radio equipment,
attend forums, operate the radios set up for demonstration, or watch
AARL movies.

This is a once a year opportunity to enjoy this segment of the
hobby, I hope you can join us.

Note that Nick Pugh, K5QXJ, will be sponsoring an AMSAT Forum Saturday
March 9 at 9am, during the Hamfest.

For more information visit
http://www.w5ddl.org/hamfest/Files/AARA%20Hamfest%20Flyer.pdf

[ANS thanks Nick Pugh for the above information]

Korean OSSI-1 Ham Radio CubeSat Frequency Coordinated

The IARU amateur radio satellite frequency coordination panel has
announced the frequencies for the OSSI-1 CubeSat developed by Hojun

Song DS1SBO.

Artist and radio amateur Hojun Song DS1SBO has spent 7 years developing his Open Source Satellite Initiative satellite OSSI-1. He has designed and developed it from scratch using readily available components rather than expensive space qualified hardware. It has a beacon in the 145 MHz band, a data communications transceiver in the 435 MHz band and carries a 44 watt LED optical beacon to flash Morse Code messages to observers on Earth.

OSSI-1 is planned to launch on April 19, 2013 into a 575 km 64.9° inclination orbit on a Soyuz-2-1b rocket from the Baikonur launch facility in Kazakhstan along with the Bion-M1, SOMP, BEESAT 2, BEESAT 3 and Dove-2 satellites.

The IARU amateur satellite frequency coordination panel has announced frequencies for a downlink on 145.980 MHz and an uplink/downlink on 437.525 MHz.

Video – How the Amateur Radio Satellite OSSI-1 Works
http://tinyurl.com/bdckaqb

Watch the BBC TV report: Korean artist has high hopes for his homemade satellite
http://www.bbc.co.uk/news/world-asia-19007475

OSSI CubeSat in New Scientist Magazine
http://amsat-uk.org/2012/11/06/ossi-cubesat-in-new-scientist-magazine/

Hojun Song DS1SBO visited London to give a well received presentation on his CubeSat to WIRED 2012
http://tinyurl.com/bcjw83z

Data Format for Korean OSSI CubeSat
http://amsat-uk.org/2013/01/23/data-format-for-korean-ossi-cubesat/

More background on OSSI Cubesate can be found in ANS-027:
Open Source Satellite OSSI CubeSat Launch in April 201

Open Source Satellite Initiative (OSSI) http://opensat.cc/

[ANS thanks AMSAT-UK for the above information]

ARRL Offers Two Sessions of their Teachers Institute

The ARRL Education & Technology Program has announced the schedule for two sessions of our professional development workshop, the Teachers Institute on Wireless Technology (TI-1) being offered during July 2013.

"We are also pleased to announce that Dayton Amateur Radio Association will be supporting and hosting a new professional development opportunity, an advanced Teachers Institute (TI-2) on Remote Sensing and Data Gathering, at their new educational facility. A March QST article includes a description of this new workshop. Please visit the ARRL website at:
http://www.arrl.org/teachers-institute-on-wireless-technology
for more information about Teachers Institute curriculum content, participant requirements, dates and locations and other details. Go to www.arrl.org/teachers-institute-application to download an

application."

Tuition, resources and most expenses to attend the Teachers Institute are paid by donations to the ARRL Education & Technology Fund. Donate to support Wireless Technology Literacy today!

[ANS thanks Debra Johnson and the ARRL for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
EMike McCardel, KC8YLD
kc8yld at amsat dot org